REMARKS/ARGUMENTS

Claims 66, 69, and 79 have been revised to use alternative language regarding the specific binding to *B. anthracis* relative to other *Bacillus* species. The substitute language of "but not" is a return to language previously used in the claims (see for example previous claim 16 as presented with Applicants' response filed August 16, 2004).

Claims 66 and 79 have also been revised to include the feature of a monoclonal antibody, or a fragment thereof, that binds the spores and vegetative cells of *B. anthracis*.

Claims 72 and 81 have been revised to correct minor clerical errors.

Claim 85 has been revised to be in independent form and to expressly recite inherent features of the claim. New claims 86-96 depend from claim 85 and are supported at least by claims 79-84, 67, and 68 and the application text as filed.

No new matter has been introduced, and entry of the above revised claims is respectfully requested.

Alleged issues under 35 U.S.C. §112, Second Paragraph

Pending claims 66-77 and 79-85 were rejected under 35 U.S.C. § 112, second paragraph as allegedly indefinite for reciting "relative to". Applicants have carefully reviewed this rejection and respectfully traverse because no *prima facie* case has been presented because the skilled person in the antibody field find no ambiguity or indefiniteness in the concept of an antibody, or fragment thereof, that "specifically binds spores or vegetative cells of *B. anthracis* relative to the spores or vegetative cells" of other *Bacillus* species.

Nevertheless, and in the interest of advancing prosecution, Applicants have revised the claims to use alternative language to embrace the same concept. Applicants believe the alternative language removes any possible issue of ambiguity or indefiniteness, and so this rejection may be properly withdrawn.

The same claims 66-77 and 79-85 were also rejected under 35 U.S.C. § 112, second paragraph as allegedly indefinite because "mere recitation of a name does not adequately defined the claimed antibody." (see page 4 of the Action mailed December 26, 2006).

Applicants again respectfully traverse because no *prima facie* case has been presented. Applicants submit that the artisan of ordinary skill in the relevant field of technology and that no adequate reasons have been provided to support this rejection.

While the Action on page 4 asserts that "[t]he claim should provide any structural properties, such as the amino acid sequence of the protein or molecular weight", Applicants respectfully submit that the requirement for such "structural properties" is only appropriate where there is some ambiguity in the mind of the skilled person, such as where would be some confusion as to what is meant by an EA1 polypeptide of *B. anthracis* as recited in the claims.

But that is clearly not the case in the instant application, where there is no demonstration or suggestion of any confusion other than the assertions in the instant rejection. But these assertions must give way to the fact that, as Applicants have repeatedly explained, the skilled person is already aware of "structural properties" for the EA1 polypeptide of *B. anthracis*. This is demonstrated by some of the documents of record in the instant application. Examples of such documents include those by Ezzell Jr. et al., Phillips et al. (abstract only), and Farchaus et al. The instant rejection provides no explanation of why these documents do not support Applicants' position that the meaning of "EA1 polypeptide of *B. anthracis*" as recited in the claims is clear and definite to the skilled person.

Applicants further note that statements in the Action mailed December 26, 2006 also seem to focus on antibodies against "epitopes of EA1 antigen" which are encompassed by the claimed invention. These statement also alleges that the instant rejection "remains because the claims fail to teach these specific epitopes or claim the structures of these antibodies that bind them" (see page 5 of the Action). Applicants respectfully submit that these statements reflect a misplaced focus on a feature not recited in the claims.

For example, the feature of an isolated monoclonal antibody, or a fragment thereof, that binds EA1 polypeptide of *B. anthracis* and has differential binding specificity between *B. anthracis* and other *Bacillus* species clearly defines the subject matter based upon its

activities. There is no requirement in the claim for binding any particular epitope of the featured EA1 polypeptide, and so no basis for the alleged requirement "to teach these epitopes" in the claims. To the contrary, such a focus on the epitopes appears to be an improper requirement for Applicants to recite a mechanism of action in the claims where there is no basis in U.S. patent law for the requirement.

Additionally, Applicants respectfully point out that there is no demonstration that a skilled person would not understand the metes and bounds of what is encompassed by the language used to define the monoclonal antibody or a fragment thereof. That language clearly defines the breadth of the claims based upon functional features of the claimed subject matter. It is well settled that a functional feature in a claim is permitted under U.S. patent law, such as that set forth at MPEP 2173.05(g) and the case decisions cited therein.

In light of the foregoing, and contrary to the instant rejection, there is no ambiguity in the pending claims. Accordingly, Applicants respectfully submit that this rejection may be properly withdrawn.

Alleged issues under 35 U.S.C. §112, First Paragraph

Pending claims 66-77 and 79-85 were rejected under 35 U.S.C. §112, first paragraph as allegedly failing to comply with the enablement requirement. Applicants have carefully reviewed this rejection and respectfully traverse because no *prima facie* case has been presented. Applicants submit that the requirements of *In re Wands* have not been met and that proper consideration of the scope of the guidance provided in the instant application illustrates how the standard cannot be met to establish a *prima facie* case of non-enablement.

As an initial matter, Applicants point out that *the statement of rejection is in error in that Applicants have not and do not characterize* the disclosed EA1-specific antibodies as able to "bind other Bacillus organisms such as to the OlpA polypeptide of B. licheniformis." Instead, Applicants had pointed out that the polyclonal antibodies of the asserted Mesnage et al. document would be expected to bind to the OlpA polypeptide of *B. licheniformis*. Unfortunately, this error has been propagated at least over the course of the last two Office

Communications. Applicants respectfully request correction of this error in the record through the next Office Communication.

Additionally, Applicants respectfully point out that the instant rejection is contradictory to the rejections alleging obviousness of the same claims in light of certain cited documents as addressed below. Applicants respectfully submit that it is inconsistent for the Office to simultaneously allege that the instant claims are "not enabled" while also alleging that the claims "would be obvious" to make and use. It is well settled that the standards for enablement include the knowledge of the skilled person in the art. Therefore, and if the Office chooses to allege that that skilled person would "find it obvious" to make and use the claimed invention, that same invention cannot be "non-enabled". Therefore, rectification of this inconsistency is respectfully submitted as necessary and urgent.

In the event that the instant rejection is maintained, Applicants turn now to the particular inadequacies of this rejection. One critical deficiency is that the disclosure of a detailed protocol in the Examples section, which begins on page 10, has been ignored. That immunization protocol describes administration of spores of *B. thuringiensis* prior to fusion of antibody-producing B-cells from the immunized mice to produce hybridoma cells. The result of this protocol was the production of hybridoma cells that produced monoclonal antibodies that specifically bind spores or vegetative cells of *B. anthracis* relative to the spores or vegetative cells of *B. thuringiensis* as well as other species, such as *B. cereus*, *B. globigii*, and *B. licheniformis*. This is shown in the data included in the Examples section.

Applicants respectfully submit that this protocol provides clear and sufficient guidance for the making of additional antibodies within the scope of the claimed invention. So factually, the detailed protocol provides a means to produce *anthracis*-specific monoclonal antibodies without undue levels of unpredictability or undue amounts of experimentation. The instant rejection fails to provide any reason why this level and quantity of guidance is insufficient to enable the claimed invention. Instead, statements in the Action mailed December 26, 2006 erroneously conclude that "it does not appear that the monoclonal antibodies would be reproducible" (see page 8).

In light of this error, which demonstrates the insufficiency of the alleged non-enablement, Applicants submit that no *prima facie* case has been demonstrated. Therefore, this rejection may be properly withdrawn.

Alleged issues under 35 U.S.C. § 102 and 103(a)

Pending claims 66-77 and 79-85 were rejected under 35 U.S.C. § 103(a) as allegedly unpatentable in light of Mesnage et al. in combination with Kohler et al. and Loomis et al. Applicants have carefully reviewed this rejection and respectfully traverse because no *prima facie* case of obviousness has been presented.

As an initial matter, Applicants point out that this rejection (as well as the alleged obviousness rejections based on Ezzell Jr. et al. addressed below) is contradictory to the rejection alleging non-enablement as explained above. Briefly, Applicants respectfully submit that it is inconsistent for the Office to simultaneously allege that the instant claims are "obvious" to make and use by the artisan of ordinary skill without the benefit of the instant application while also alleging that the claimed invention is "not enabled." It is well settled that a *prima facie* case of obviousness cannot be based upon use of Applicants' disclosure by a an artisan of ordinary skill. Therefore, and if the Office chooses to allege that the claimed invention is "not enable", that same invention cannot be "obvious" to an artisan of ordinary skill lacking the benefit of the instant disclosure. Therefore, rectification of this inconsistency is respectfully submitted as necessary and urgent.

In the event that the instant rejection is maintained, Applicants turn now to the instant rejection. The claims have been revised to feature an isolated monoclonal antibody, or a fragment thereof, that binds *B. anthracis* spores **and** vegetative cells (in the case of claims 66-68 and 79-85) and that bind *B. anthracis* spores in the case of claim 69. But none of the cited documents provides any teaching or suggestion of an antibody that binds *B. anthracis* spores. To the contrary, Mesnage et al. clearly report on their polyclonal antibodies as binding a cell associated antigen EA1, with no indication that it can bind a *B. anthracis* spore.

It is well settled law that an essential component of a *prima facie* case of obviousness is that all features of a claimed invention must be taught or suggested. See for

example, MPEP 2143.03 and the cases cited therein. So where a feature of the claims, such as the requirement for binding *B. anthracis* spores, is not present or suggested by any of the cited documents, alone or in combination, no *prima facie* case of obviousness is possible.

Additionally, Applicants point out that there is no apparent appreciation of the distinctiveness of claim 85 (and new claims 86-96) apart from claims 66-77 and 79-84. Claims 85-96 are directed to methods which include the features of 1) forming a complex between *B. anthracis* spores or cells in a sample and a monoclonal antibody, or fragment thereof, that specifically binds spores and vegetative cells of *B. anthracis* but not the spores or vegetative cells of *B. thuringiensis*, *B. cereus*, *B. globigii*, and *B. licheniformis*; and 2) detecting the complex of *B. anthracis* spores or cells and the antibody or fragment thereof. Dependent claim 95 expressly features spore containing complexes while claim 96 expressly features cell containing complexes.

But none of the cited documents, alone or in any combination, teach or suggest the formation and detection of a complex containing *B. anthracis* spores or cells. For example, Mesnage et al. only report on the use of polyclonal antibodies against EA1 in Western blots with disrupted cells. So there is no teaching or suggestion of a complex as featured in claims 85-96. Moreover, there is no expectation that any of the polyclonal antibodies of Mesnage et al. is capable of binding spores and cells of *B. anthracis* as featured in the claims.

Therefore, and in light of the above described deficiencies in the instant rejection, Applicants respectfully submit that it is misplaced and may be properly withdrawn.

Pending claims 66, 68, and 70-85 were rejected under 35 U.S.C. §102(b) as allegedly anticipated by Ezzell Jr. et al. or alternatively under 35 U.S.C. §103(a) as allegedly obvious over Ezzell Jr. et al. Applicants have carefully reviewed this rejection and respectfully traverse because no *prima facie* case of anticipation or obviousness has been presented.

With respect to the allegation of anticipation, Applicants respectfully point out that an essential component of a *prima facie* case of anticipation is that all features of a claimed invention must be disclosed in a single document. See for example, MPEP 2131 and the cases cited therein. But the instant rejection fails to meet this standard.

Applicants point out that factually, Ezzell Jr. et al. do not disclose or suggest a monoclonal antibody that binds both spores and cells of *B. anthracis* and so cannot anticipate the claims.

Additionally, and with respect to the assertion that Ezzell Jr. et al. teach "mouse monoclonal antibodies", Applicants point out that there is no data shown with respect to these putative antibodies. However, the statements regarding the antibody on page 355, left column, of Ezzell Jr. et al. appear to only indicate that the putative antibody binds "nonencapsulated cells". This is in contrast to the instant claims, where the monoclonal antibody binds *B. anthracis* spores. Therefore, Ezzell Jr. et al. do not teach or suggest a spore binding monoclonal antibody as featured in the rejected claims.

Finally, and with respect to claim 68, Applicants point out that Ezzell Jr. et al. do not teach or suggest a detection system as featured in the claim.

Based on the foregoing, Applicants respectfully submit that no *prima facie* case of anticipation is possible against the rejected claims, and the instant rejection may be properly withdrawn.

With respect to the allegation of obviousness, Applicants respectfully point out that essential components of a *prima facie* case of obviousness include 1) all features of a claimed invention must be taught or suggested (see for example, MPEP 2143.03 and the cases cited therein) and 2) an expectation of success in the making and using of the claimed invention (see for example, MPEP 2143.02). So where a feature of the claims, such as the requirement for binding *B. anthracis* spores, is not present or suggested by a cited document no *prima facie* case of obviousness is possible. Additionally, and where no expectation of success in making and using the claimed invention is present, no *prima facie* case of obviousness is possible.

Turning to the instant rejection, Applicants have already explained above the failure to meet component 1) of a *prima facie* case of obviousness. Additionally, Applicants point out that Ezzell Jr. et al. provide no expectation of success for making a monoclonal antibody that binds *B. anthracis* spores. Given these deficiencies, the allegation of obviousness against the rejected claims is misplaced, and this rejection may be properly withdrawn.

Pending claims 67 and 69 were rejected under 35 U.S.C. §103(a) as allegedly obvious over Ezzell Jr. et al. and Loomis et al. Applicants have carefully reviewed this rejection and respectfully traverse because no *prima facie* case of obviousness has been presented.

As an initial matter, Applicants point out that claim 68 is not included in the statement of the instant rejection, and so Applicants believe it to be free from the instant rejection and any combination of these documents.

As for the rejected claims, the feature of a spore binding monoclonal antibody is not taught or suggested by Ezzell Jr. et al. This deficiency has been explained in greater detail above, and Loomis et al. fails to provide any remedy. Therefore, no *prima facie* case of obviousness is possible, and this rejection may be properly withdrawn.

CONCLUSION

In view of the foregoing, Applicants believe all claims now pending in this Application are in condition for allowance. The issuance of a formal Notice of Allowance at an early date is respectfully requested.

If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 858-350-6100.

Respectfully submitted,

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